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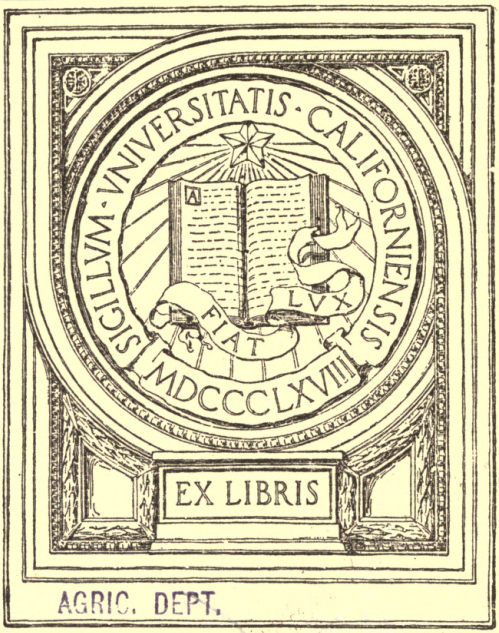
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A MANUAL

ON

POULTRY.

PREPARED UNDER THE DIRECTION OF THE COMMISSIONER OF AGRICULTURE OF GEORGIA.

J. T. HENDERSON, COMMISSIONER.

SECOND EDITION.

1883.

ATLANTA, GEORGIA:
JAS. P. HARRISON & CO., PRINTERS.
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LIST OF ILLUSTRATIONS.

It is with pleasure that acknowledgment is here made to Messrs. J. T. Scott & Bro., Breeders of Fancy Poultry, Italian Bees and Queens, Crawfish Springs, Walker county, Ga., for the following electrotypes illustrating the breeds and varieties of Poultry:

AMERICAN DOMINIQUES,
BLACK COCHIN,
BLACK-BREASTED RED GAME,
BROWN LEGHORN,
BRONZE GOBBLER,
BUFF COCHIN,
DARK BRAHMA,
HOUDANS,
JAPANESE BANTAMS,
LA FLECHE,
LIGHT BRAHMAS,
PARTRIDGE COCHINS,
PEKIN DUCKS,
PLYMOUTH ROCKS,
RED PILE GAME,
ROUEN DUCKS,
SILVER SPANGLED HAMBURGS,
SILVER PENCILED HAMBURGS,
TOULOUSE GEESE,
WHITE COCHINS,
WHITE LEGHORNS,
WHITE CRESTED BLACK POLISH,
WHITE CRESTED WHITE POLISH,
WHITE FACED BLACK SPANISH.

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INTRODUCTORY.

While the Act establishing this Department and defining the duties of the Commissioner does not especially mention Poultry as one of the subjects to which his attention should be directed, its importance as one of the productive industries so closely connected with Agriculture, in the opinion of the Commissioner, justifies the attention which he is about to devote to it in this little work. Indeed, so much depends upon the intelligence and care bestowed upon the small industries of the farm that he would feel that he was not fully discharging his duties to the people of the State, did he not supply the information at his command on a subject so closely connected with their health, comfort and profit.

The following pages will be devoted to practical information suited to the use and application of the wives of farmers—such information as it is hoped will aid the housewives of Georgia in not only substituting, to a large extent, eggs and poultry for pork on their tables, but stimulate them to the production of a surplus of these wholesome articles of diet to be sold to the less fortunate dwellers in towns and cities.

The work is not intended for the fancier, nor for those who pursue the business on a large scale, but for the farmer's wife. There will be much in the work which to the fancier will seem crude and unnecessary; but in order to instruct those without experience or knowledge of the business, it is necessary to present the appearance (to the well informed) of presuming very far upon the ignorance of the reader.

One of the secrets of the success of French agriculture is the attention bestowed upon the small industries of the farm, and one of the principal obstacles to successful agriculture in the Southern States is the neglect of these industries. The dairy, garden, poultry yard, apiary, and fish ponds, should, not only contribute largely to the food supply of the family but should, by the sale of surplus products, materially supplement the principal sources of income of the farm.

The hope that the information conveyed in this little work may induce the bestowal of more and better attention upon the important industry of which it treats, and thus increase the health, pleasure, profit and comfort of the families of Georgia, induces its publication.

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Manual on Poultry.

According to Darwin, who has given the subject a very thorough and systematic investigation, our domestic gallinaceous fowls have all descended from one common source, viz: the wild *Gallus Bankiva* of southeastern Asia.

The black-breasted red game cock resembles very closely the wild *Gallus Bankiva* cock of India.

Mr. Darwin experimented with various crosses of domestic breeds, and observed that there was invariably a tendency to a reversion to the original red color of the wild fowl.

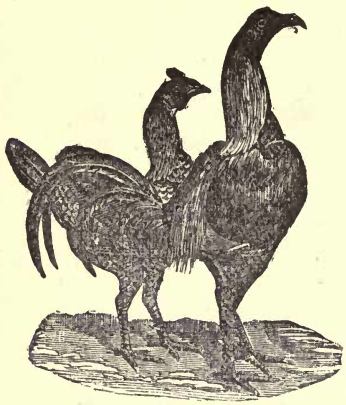
All breeders of improved stock, of whatever kind, are familiar with the fact that a constant tendency to reversion to the original type exists, and must be guarded against by careful, judicious election, annually repeated.

Peculiarities of form and color have been seized upon as starting points from which to establish new breeds, by in-breeding and subsequent crossing with the original. After a few distinct varieties were established the multiplication of breeds became an easy matter. Breeds of cattle, horses, sheep and swine have been multiplied in the same manner.

Sub-varieties are produced by election of breeding stock of a particular type or color, and by breeding the offspring back to the sire, until his type is so fixed in the offspring that it becomes capable of uniformly reproducing its kind when bred *inter se*. Breeds have thus been multiplied both by following up accidental peculiarities, and by systematic mating of birds of different established breeds.

CLASSIFICATION AND DESCRIPTION OF BREEDS.

GAMES.



BLACK-BREASTED RED GAME.

This seems to be the typical breed, most closely resembling the wild parent, *Gallus Bankiva.*

The game is notoriously the most hardy breed of chickens in the whole catalogue, and independently of their value as fighters in the cock-pit, with which this work has nothing to do, they are well worthy of cultivation, purely for their economical qualities.

The hens are good layers, superior sitters and unsurpassed mothers. A serious objection, however, to them as mothers is that they are too much disposed to fight the young chicks of other broods. This propensity brings with it, however, a compensating quality, viz: that of defending with great spirit their own brood against all intruders.

The chicks are bright and hardy, but mature slowly. The flesh of the game is considered of superior quality, though less in quantity than in birds of the same age in most other commonly cultivated breeds.

There are many varieties of the game differing but little in essential qualities, the distinctions being based mainly upon the color of the plumage. As plumage is a matter of small importance, so far as the objects of this work are concerned, further than to aid the reader in recognizing pure bred birds, the varieties of the game will not be described, but only a description covering the distinctive characteristics of the game as a breed, since this will enable one to recognize a game wherever seen and of whatever color.

GENERAL DESCRIPTION OF GAMES.

The head is long, thin and tapering, with beak more curved than that of any other breed. Color varies in the different varieties.

Comb thin and straight, single and low in front. A game cock with a full comb is rarely seen. They are usually dubbed in both comb and wattles.

Ear Lobes red and smooth.

Neck long, well-arched and tapering. Hackles short.

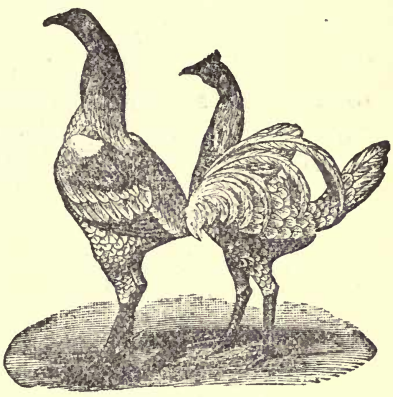
Body firm, broad across the shoulders, and tapering towards the tail.

Tail full and slightly drooping.

Legs stout, rather long, and set well apart.

The principal varieties of the game breed are the Black, Black-breasted Red, Blue, Brown-red, Yellow Duck-wing, Silver Duck-wing, Gray, Ginger-red, White-Pile, Red-Pile, Derby, White and Spangled.

The opinions as to which of this list is the most desirable variety are quite conflicting, though the majority seem to give the preference to the Black-breasted Red and the Derby.



RED PILE GAME.

There are other varieties, but the list embraces those principally grown in America.

The Game Hen in form resembles the cock, her neck seeming rather out of proportion to her body. The head is neat and , with clean face and small, erect comb; ear lobes and wattles small. In color the plumage approximates that of the cock, making due allowance for sex. The feathers should lie close to the body and the tail feathers be held closely together, and not collectively fan-shaped.

The cockerels intended for stock birds may be dubbed when four months old, but must not be turned with each other while the combs are freshly cut. Birds true to the desired type should be selected for stock purposes in order to perpetuate uniformity of form and color.

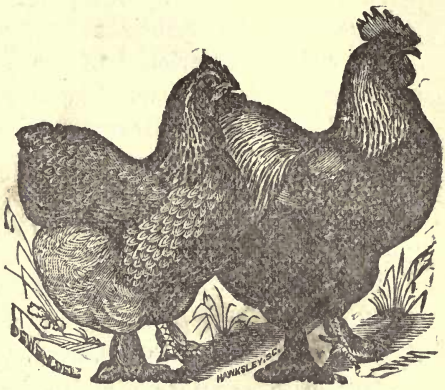
The chicks are somewhat delicate when first hatched, and hence, unless provision has been made for protecting them for some weeks from cold wind, rains and dew, they should not hatch before spring is well advanced. The hens with broods should not be cooped so near each other that the chicks of one brood will invade the coop

of the other, lest the hens, which are quite savage towards other than their own chicks, destroy them.

THE ASIATICS—COCHINS AND BRAHMAS.

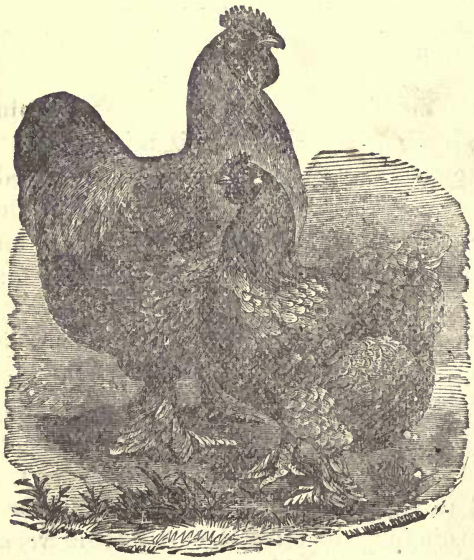
The following description of the distinctive characteristics of the Cochins will answer for all of the varieties so far as the substantial features of the breed are concerned.

The principal difference between the varieties of the breed is found in the color of the plumage or in non-essential features.



PARTRIDGE COCHINS.

The following extract from Hewitt's description of the Buff Cochin is found in The Poultry Book, by W. B. Tegetmeier:



BUFF COCHINS.

"In size and weight the larger the better, if without coarseness. Sometimes the cocks attain the weight of thirteen and a half pounds; but from eleven to twelve pounds are good average birds. The hens weigh from eight to ten pounds, if they continue healthy and are well fed, they generally increase in weight until their third year.

"The carriage and form of the cock should be fine, noble and very majestic; the breast very broad, forming a straight line from the crop to the thighs; the back short and wide; the tail only very slightly raised, compared with that of other fowls; the wings ex-

ceedingly short, and held tightly to the sides; the legs, thighs and saddle unusually large in proportion to the rest of the body; the head small and carried well up.

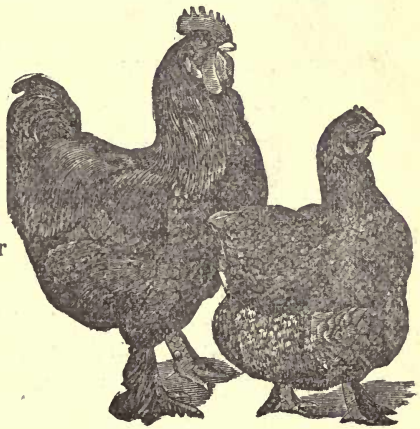
"The carriage of the hen similar to that of the cock in general character, but the head is carried much lower, and the neatness and fine expression of the face are extremely pleasing in really high-bred specimens.

"The plumage in the cock is very soft, owl-like, and exceedingly downy, giving a peculiar softness to the general appearance.

"Cochins possess a great bulk of feathers, each one being wider across than in other fowls. In the hen the peculiar softness of the plumage is more marked even than in the cock, especially on the thighs and saddle.

"The neck-hackle of the cock is extremely full, * * * spreading over the base of the wings.

"The thighs of the cock are stronger than those of any other variety; exceedingly heavy in the feathering; all the feathers sit very loosely, and are peculiarly downy, forming in part what is commonly called the 'fluff.' The shafts of these feathers should be weak and flexible, contrasting with the firm stiff feathers producing the 'falcon-hock,' which is to be regarded as a defect. In the hen the fluffiness is far more conspicuous than in the cocks."



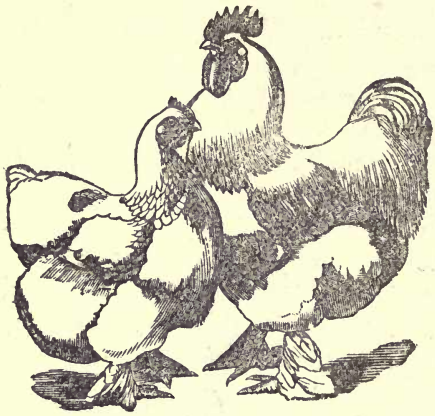
BLACK COCHINS.

The Cochins are good winter layers, good sitters and fair mothers. From long disuse of their wings and their heavy weight they can fly but little, and hence can be easily restrained within the desired bounds without expensive fencing. Their roosts should not be more than two feet from the floor of the house, so that they may easily reach them and to prevent breaking their feet and breast bones in flying down. If they are required to perch upon high roosts they are liable to contract club-foot, a trouble resembling stone-bruise on the human foot, which generally destroys the usefulness of the birds. They bear confinement better

than the smaller breeds, and hence are better suited to small lots, in which they must be confined to very contracted quarters.

The chicks of the Cochins are remarkably hardy, grow rapidly, and acquire sufficient size to be used by the time they are feathered over. The principal objection to the Cochins as a table fowl is the smallness of the development of the breast in proportion to that of less desirable parts. They are conspicuous for their large thighs and broad and meaty backs.

The cross of the Cochin cock on the common dunghill hen produces a grade which is hardy and thrifty when young; matures rapidly, and as a table fowl gives general satisfaction.



WHITE COCHIN.

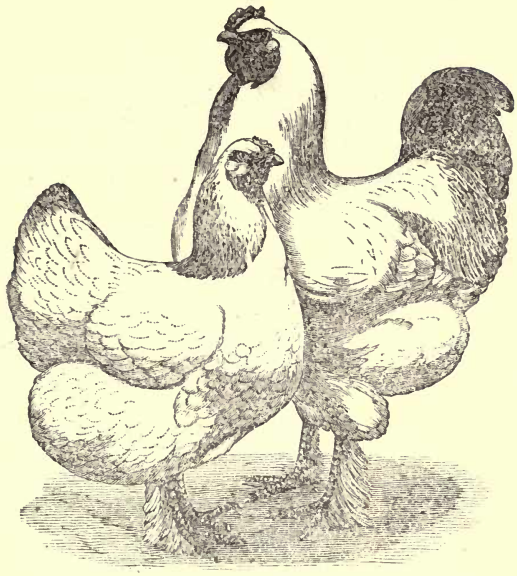
The Cochin hens, as well as their half-breeds, make excellent sitters and mothers for the yards in which the non-sitting breeds, such as Leghorn, Spanish, etc., are principally employed.

The principal varieties of Cochins are: Buff, Partridge, Pea-comb Partridge, White, Black and Cinnamon—all of which correspond closely in essential characteristics, the chief difference resting in the color of the plumage.

THE BRAHMA FOWLS

Resemble the Cochins very closely in general characteristics. Indeed, it is claimed by some that the Brahmas were derived from the Cochins. Be this as it may, the two are very closely allied, with no greater difference in essential characteristics than exist between sub-varieties in some of the standard breeds.

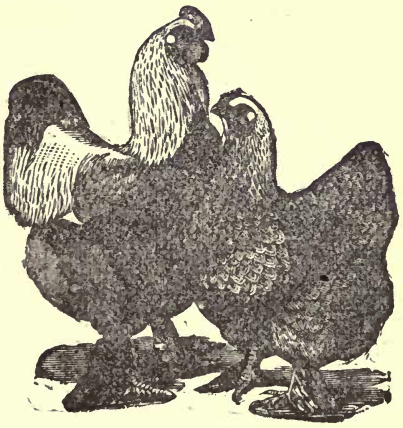
The light Brahma is one of the most popular breeds, having large size and hardiness, both in the young and adult birds. The flesh is well distributed over the most valuable and desirable parts. In color they are mainly white, but with black in the main feathers of the tail and the flight feathers of the wing, and the hackle feathers have a decided black stripe down the centre of each.



LIGHT BRAHMAS.

The hens are good layers, reliable sitters, and careful mothers. Like the Cochins, they do well in confinement within limited bounds, where they are restrained without difficulty, since they fly but little.

The Dark Brahma is not quite so heavy as the light, the standard weight of cock and hen being each one pound less than in the Light Brahma. The prevailing color of the Dark Brahma cock is black, with silvery white hackles, wing, crest and saddle feathers.



DARK BRAHMAS.

The hen corresponds very closely in color with the male, making allowance for the characteristic differences between the sexes. Brahmas are usually bred with what are called pea-combs, which have the appearance of three combs united, that in the centre a little taller than the other two. Each comb is separately serrated.

MALAYS.

This breed is grown to some extent pure, in England, on account of its table qualities, and has been used to cross the Game. Owing to their ill-nature, the poor laying qualities of the hens, and the tenderness of the chicks, they have not been grown to any extent in this country.

LEGHORNS—BROWN AND WHITE.

BROWN LEGHORNS.

This breed is deservedly one of the most popular bred in the United States, on account of their superior laying qualities, neat and handsome appearance and hardiness. They are "high flyers," active, good foragers, and to give best results should have ample range. If they have their liberty they will range over five to ten acres of land.

As summer layers, the Leghorns are unsurpassed, and when well fed and allowed their liberty they furnish more or less eggs throughout the year. They are non-sitters, and hence a few common hens or Brahmas should be kept for the purpose of hatching and rearing the chicks. The Brahmas are reliable sitters and good mothers; besides, they are good winter layers, thus supplementing the supply

of eggs at the season when the Leghorns lay least. Leghorn pullets, of the early spring-hatching, commence to lay early in the fall and continue, under good treatment, through the winter.

Again, the cross of the Leghorn upon the Brahma produces a hardy, thrifty, early-maturing bird, with superior table qualities.

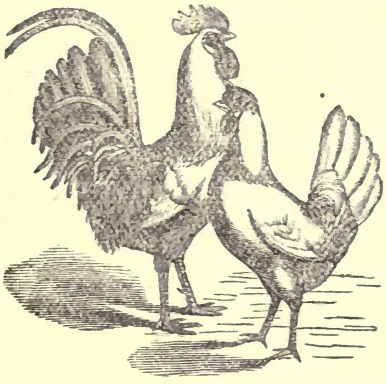
The Brahma hens may be required to hatch some of their own eggs in the latter part of winter for a supply of early spring chickens.

The Leghorns should not be hatched very early in the spring, except enough to supply pullets for fall layers, so that a supply of early spring chickens may thus be grown before commencing to hatch the Leghorns for stock fowls.

The Leghorns mature so rapidly that they can be hatched out later in the season than the larger breeds. The young Leghorns make very choice broilers—equal in quality to those of any other breed at the same age, though smaller than some of them. The pullets mature very rapidly, and often commence to lay at from four to five months if well fed or allowed their freedom on a good range.

If kept for several generations in small enclosures the Leyhorn will decline in size, while, if furnished a large range on which they find an abundance of food, a decided increase in size will result in a few generations.

A dozen Leghorn hens will furnish an abundant supply of eggs for an ordinary family for about nine months in the year, and, if well treated, will furnish some during the remaining three months.



WHITE LEGHORNS.

As egg producers they have no superior.

Mr. Felch mentions a statement made by Mr. Whitman in 1873. He says: "With fifty-one Leghorns, which laid two hundred and seven eggs each, which he sold for thirty-one cents per dozen, the cost of keeping the fowls being $1.13 each, he shows a profit of $4.04 per head."

While this is perhaps an extreme case, it serves to show what may be accomplished by the exercise of extraordinary care and skill in rearing and managing poultry.

There are only three varieties of the Leghorn grown, viz: The Brown, the White and the Dominique. Each has its advocates, but the Brown seems to be the favorite with a large majority of the breeders.

DESCRIPTION OF BROWN LEGHORNS.

The cock should be black-red in color. The breast, wings and tail all black, hackles a golden bay, back dark red, legs bright yellow, comb bright red, large and upright, deeply serrated with from four to six points, face red and smooth, wattles large and pendent, ear-lobes white or creamy white, but in no event red or tinged with red.

The carriage of the cock should be bold, manly and full of gallantry towards the other sex.

The hens should be medium in size, the body varying from dark brown on the back to a lighter shade underneath; the wings and tail feathers a dull black; comb, paler red than that of the cock, thin, single, deeply serrated, free from side sprigs, and drooping gracefully to one side; face and wattles smooth and red; ear-lobes white; legs yellow.

The stems of the feathers of the body are penciled in the center with a lighter color than that of the feathers.

The above description will answer for the white variety in every respect except in color.

There are Black Leghorns and Dominique Leghorns, but they have not been so generally grown as the brown and the white. They differ but little from the last two, except in the color of their plumage.

They are all famous layers and are non-sitters.

SPANISH BREEDS.

WHITE-FACED BLACK SPANISH.

Of these the white-faced Black Spanish is by far the most important, since it is the most showy and useful. These birds are of medium size, the cocks weighing seven and the hens six pounds each. The cock should possess style in his carriage. The plumage should be a deep black with glossy reflections in the light. The comb above medium, single, deeply serrated with not more than six points. The face and ear-lobes white throughout.

The legs are blue or of a dark lead-color. The legs are long, but the bodies of both sexes are plump and larger than they appear. The color of the face is considered important in this breed as the most distinctive indication of purity of blood.

The chicks are very tender when young, though the adult birds are quite hardy. The hens are good layers of large white eggs, which are claimed by their advocates to be larger than those of any other breed. They rank, perhaps, next to the Leghorns in egg-production.

Of the other varieties of Spanish fowls, the Minorca resembles the white-faced Black in many respects, but is decidedly larger. These are excellent layers, and the chicks are quite hardy. The white differs from the Minorca very little, except in the color of the plumage.

The Andalusians are slaty-blue in color of plumage, and resemble the Minorcas in many respects, but are more hardy.

There is, however, no need of the Spanish breeds so long as we have the Leghorn, which have, to a large extent, superseded the Spanish, and probably will do so completely when they are fully appreciated.

DORKINGS.

This is a valuable breed, which some claim originated in England, while others say they were cultivated by the Romans and described by Plato and Columella.

The Dorking is of large size and of superior table quality, though the chicks are rather delicate when young. A peculiarty of the breed is that they have a fifth toe in the rear. The varieties are the white, silver-gray, and gray or colored. This breed is very popular in England, but has not been appreciated in America.

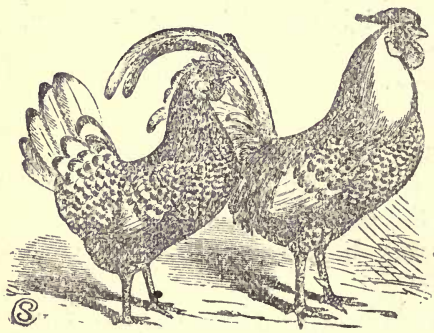
HAMBURGS.

This is a beautiful breed, exceedingly showy in bearing and plumage. They are very fine layers, but produce small eggs. Their great laying qualities procured for them the name of "Dutch every-day layers." They are now, however, surpassed by some other breeds.

They have rose combs and opaque white ear-lobes. Their plumage is very distinctly marked. In size they are rather below medium.

SILVER SPANGLED HAMBURGS.

The varieties are Golden Spangled, Golden Penciled, Silver Spangled, Silver Penciled, White and Black.



SILVER PENCILED HAMBURGS.

Their general characteristics vary but little, the principal difference being in the plumage. They have never been popular in this country, except with a few, who fancy their stylish carriage and beautiful plumage. They have good qualities, but are surpassed by other breeds.

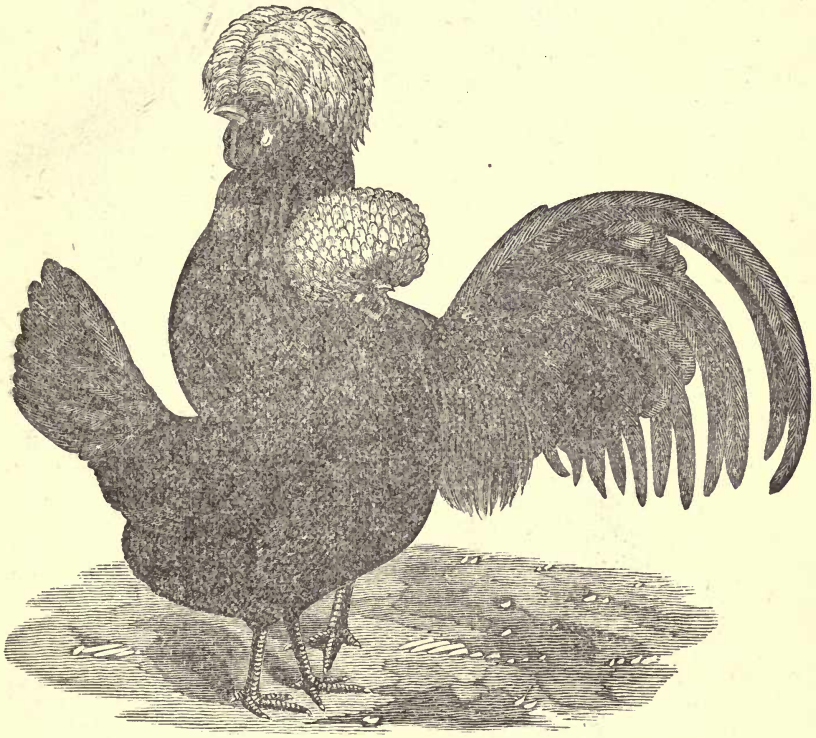
THE POLISH BREEDS.

These are breeds of great beauty, with valuable qualities of a more useful character; but the characteristic feature of the breed, and that which is most conspicuous in its beauty, the crest, is a source of disease.

The Poland fowls all have a protuberant growth of bone upon

their heads, from which a luxuriant crest of feathers grows, causing a peculiar and rather pleasing appearance, but really impairing the usefulness of the fowls by rendering them more subject to disease and more liable to be taken by hawks.

The Polish fowls are good layers and possess fair table qualities. They are in size about medium; in beauty they are unsurpassed,



WHITE-CRESTED BLACK POLISH.

but it is a beauty which will attract the amateur fancier, rather than the practical breeder, who looks to profit as well as pleasure in the conduct of his poultry yard.

While the Polands are prolific layers under favorable circumstances, and possess good table qualities, they require greater protection from inclement weather than any other breed. The heavy crest of feathers upon their heads renders them peculiarly subject to cold and damp, since these feathers become wet if they are exposed to showers and thus increase the tendency to cold and other

affections of the head. Three varieties of this breed have a well defined beard.

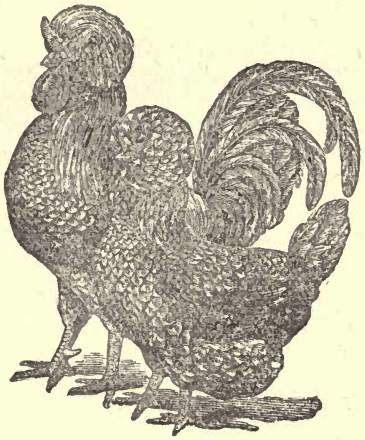
The varieties, as now known, which are classed under the general name of Polish, are White-crested Black, Golden, Silver, White,

WHITE-CRESTED WHITE POLISH.

Bearded Golden, Bearded Silver, and Bearded White; all beautiful birds and very superior layers, but too delicate to thrive under ordinary treatment.

THE FRENCH BREEDS.

This class embraces the Breda or Gueldres fowl, the Houdans, the La Bresse, the La Fleche and Crevecœurs. The Houdans, the *La Fleche* and *Crevecœurs* are all breeds of decided merit. Some

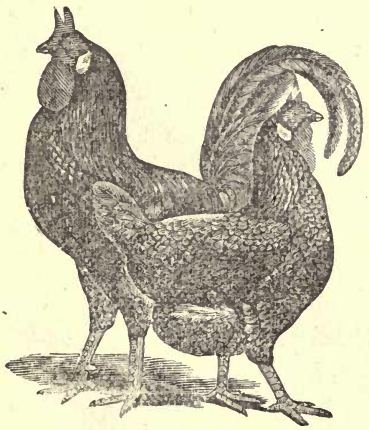


HOUDANS.

who have bred the La Fleche in Georgia pronounce them superior, as a combination fowl, for the production of both eggs and poultry for the table, even to the Plymouth Rocks.

They are large, hardy except when young, showy, prolific layers of large eggs, grow rapidly, and make superior table fowls. They have crested heads and combs divided into two projections resembling horns.

The ear-lobes are white in the La Fleche and red in the Crevecœur.



LA FLECHE.

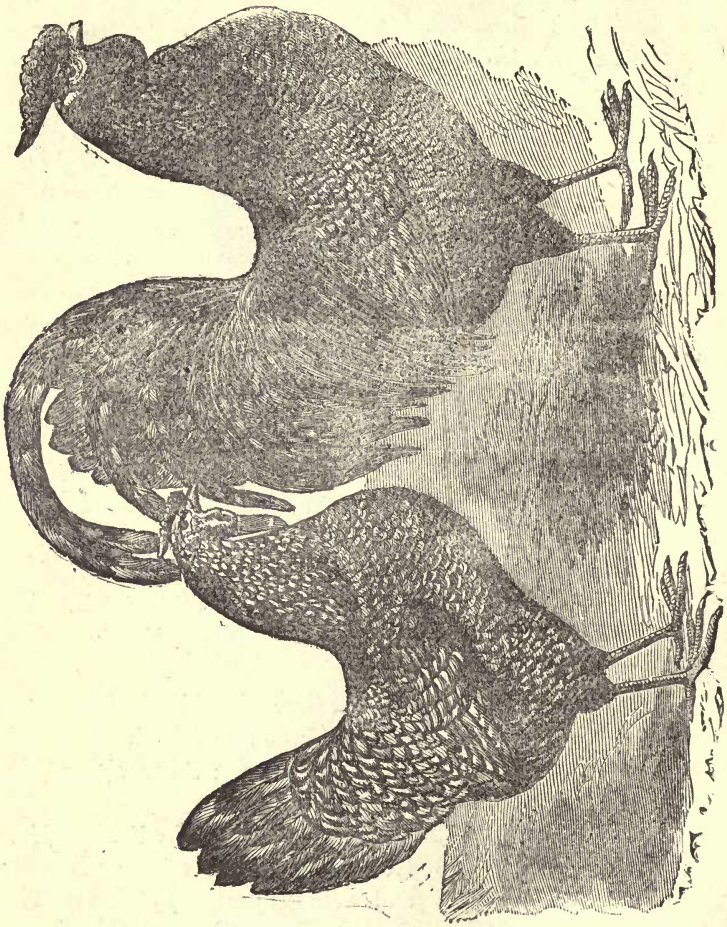
The plumage of both black, with a metallic lustre; feet and legs black or slate-colored.

Speaking of the La Fleche, Mr. I K. Felch, author of the "Breeding and Management of Poultry or Thorough-breds for Practical Use," says: "A good healthy hen of this breed, we believe, will lay more eggs from March to October than any other breed, not excepting the Leghorn."

The La Bresse is not bred, so far as known, in this country, nor have they ever been extensively bred anywhere except locally where they originated.

The Houdans are large and hardy, and quite popular with those who have tried them.

Mr. Wright, in his "Practical Poultry Keeper," remarks in regard to the Houdans: "We have in this breed the size, form and quality

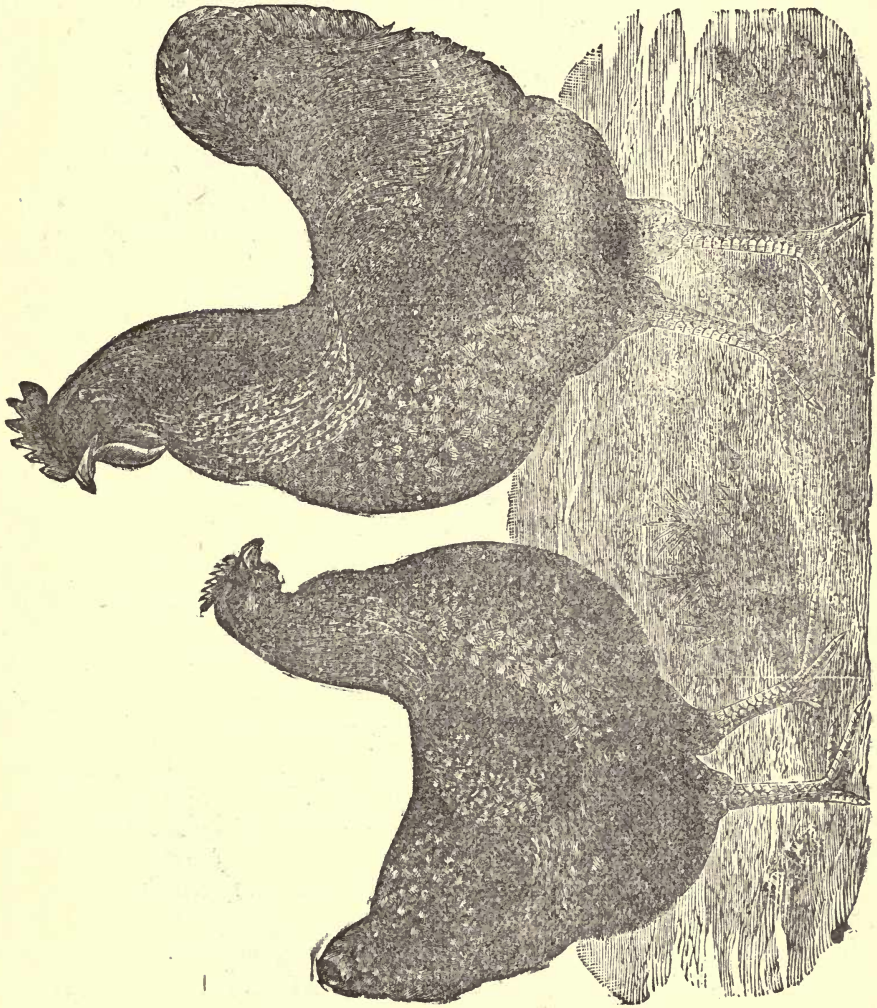


THE AMERICAN DOMINIQUE.

of the Dorking, with earlier maturity. The hen is a most prolific layer of good-sized eggs, which will almost invariably be found *fertile*—a point the Dorking is very deficient in, as all prize breeders know to their cost. The chickens feather very rapidly and early, but are nevertheless exceedingly hardy, perhaps more so than any, except Cochins or Brahmas, and are therefore easily reared with

little loss. They are emphatically the fowl for the farmer, and will yield an ample profit on good feeding, both in eggs and flesh."

This is high encomium from good authority.



PLYMOUTH ROCKS.

The Breda has not yet been introduced into this country so far as is known.

This is a valuable breed, hardy and prolific, and of medium size.

In color they are a slaty blue, having each feather penciled across with bars of darker blue.

The comb is red in color, and in form what is known as a rose-comb, flat on top and covered above with spikelets, and terminating in a longer spike at the rear; ear-lobes and wattles red; legs yellow, and in size a little above medium. As a combination fowl for the farm they have few superiors.

There is no breed more popular as a combination fowl than the Plymouth Rocks. They are above medium in size, the cocks weighing ten pounds and the hens eight, some even exceeding these figures. The hens are good layers, of medium size, reddish-yellow eggs, which resemble, in size and color, those of the Cochin. They are reasonably good sitters and excellent mothers. The chicks are hardy, grow rapidly and produce a superior table fowl.

There is an unfortunate disposition on the part of some breedeas to increase the size of these birds, to their detriment as a breed. They will prove more profitable and give more general satisfaction if bred to the standard size of ten pounds for cocks and eight for hens.

The breed has originated in America, and is a triumph of the skill of its originators. Mr. I. K. Felch, in his "Amateurs' Manual," speaks of their origin as follows: "This breed, in its different families, is cross-bred in foundation blood, with top-crosses of the Dominique to secure the color. To notice some of the modes which have produced these beautiful birds, we cite:

"1. Black Spanish on White Cochin—top-crossed with Dominiques.

"2. Black Spanish on Gray Dorking—top-crossed with Dominique.

"3. Dominique on Buff Cochin hens, reaching the result, through the strong breeding-color quality of the Dominique, by years of breeding.

"4. White Birmingham on the Black Java—top-crossed with Dominique.

"5. White Birmingham on the Black Java, and the progeny bred together, the progeny coming white and black and Dominique. These Dominique-colorod birds, bred with the males produced by mating No. 4, produced the best and surest breeders for color of plumage and legs, and were known by many as the Essex strain, being the same in foundation blood as seen in the so-called Mark Pitman birds, of 1872–'3."

It will be seen that in four of the five instances, black birds were crossed upon white, or light-colored ones, with similar results, after top-crossing with the Dominique.

The Plymouth Rock cock is a showy bird ; beak and legs yellow, plumage bluish-gray, each feather having a penciling of darker color across it, comb, ear-lobes, face and wattles all red, comb small, single and erect. Red or white feathers are not admissible in either cock or hen.

The hen is marked like the cock, except that the plumage is darker in color.

This is, at present, the most popular combination breed for eggs and table use.

The cross of the Plymouth Rock cock on the common hen produces a marked improvement upon the latter. The chicks are hardy and mature early. It is far more profitable, however, to breed the Plymouth Rocks pure, since after stock to start with are procured they cost no more than the grades of common fowls, while the sale of eggs and stock birds is very profitable at the prices which now prevail.

BARN YARD FOWLS.

The great bulk of the fowls cultivated in Georgia belong to no particular breed, though traces of improved breeds may be seen in many of them as the effect of crosses of some of the thoroughbreds.

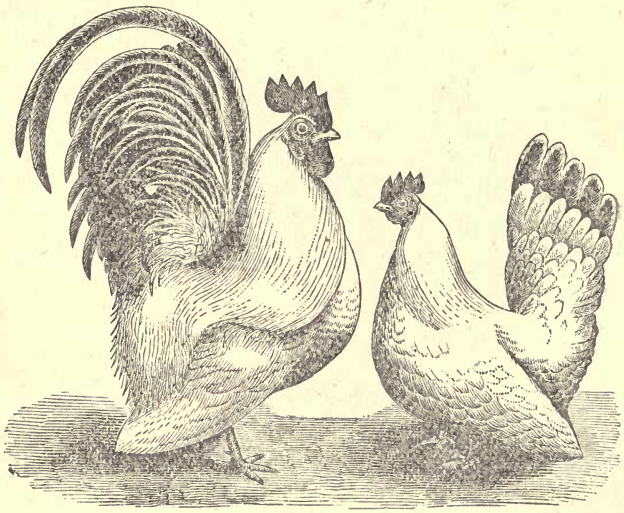
Indeed, grades of superior quality are often found among the poultry sent to our markets.

Crosses of the cocks of the Asiatics, or those of other large breeds, upon the common dung-hill hens produce superior table fowls. The chicks are hardy and mature rapidly.

The continued use of the thoroughbred cocks will build up a yard of fine fowls, but if the grade cocks are used rapid deterioration takes place, the tendency being, in accordance with natural laws, to revert to the primitive inferior type. The present thoroughbred types of poultry are triumphs of the skill of breeders, just as are the Short horn cattle and the Berkshire pigs of the present day, and constant, careful selection is necessary to sustain the breeds in their purity, and to counteract the natural tendency to revert to the original type.

BANTAMS.

These diminutive birds afford entertainment to the fancier, especially if young. They make very interesting pets, and are good layers, sitters and mothers. While no one would select them solely on the ground of the profit to be derived from them, except by the sale of birds to fanciers, yet on small lots they may be profitably grown and kept healthy where larger birds would not thrive. They are good egg producers and make very nice broilers.



JAPANESE BANTAMS.

When allowed a wide range on which they procure a variety of food, the broilers are almost as nice and but little larger than partridges.

There is a number of varieties of this breed, all of which are very pretty—some are exceedingly handsome.

The varieties differ but little in economic value, while they serve the purpose for which they are intended, viz: Gratifying the taste of different fanciers.

BEST BREEDS FOR GEORGIA.

This is a very important question to those who propose devoting much attention to breeding poultry, either for market or for an abundant family supply of eggs and broilers for the private table, and one which has been quite definitely settled by the most progressive and best informed breeders.

The preponderance of evidence reported by correspondents is in favor of the Plymouth Rock as a combination fowl for the farm where only one breed is to be kept. The next in favor for general purposes is the Light Brahma.

The verdict is almost unanimous in favor of the Leghorn for egg production, the preference being generally given to the brown variety.

One of the most experienced breeders in the State (Mr. Edgar Ross, of Bibb county), after experimenting with the following varieties, viz: Light Brahma, Dark Brahma, Buff, Partridge, White and Black Cochins, Plymouth Rocks, Houdan, Crevecœur, LaFleche, Black Spanish, White and Brown Leghorn, Black, Silver-laced, Silver-spangled and Golden-spangled Hamburgs, Black-breasted Red, Derby and Brown-red Game, and Game, Black and Seabright Bantams, in answer to the following question: "Which variety has given the most satisfactory results as a combination fowl for eggs and table use?" says, "Brown Leghorn, because they are excellent egg producers, summer and winter, and the chicks mature rapidly, being ready for the table at ten weeks old—flesh of excellent quality."

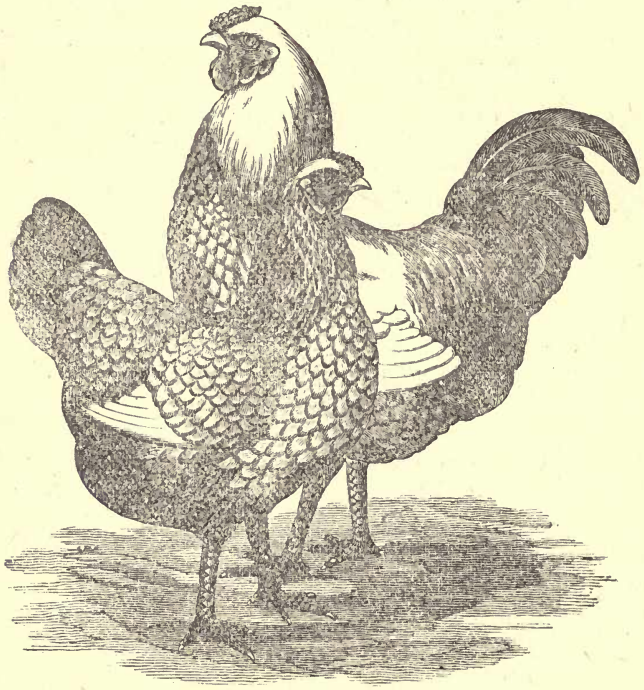
In answsr to the question, "Which has given the most satisfactory results as egg producers?" he says, "Leghorns. The White Leghorns are as good layers as the Brown, but I prefer the latter on account of their color. They lay at five months of age." As a table fowl he prefers the Light Brahma.

In regard to crosses, he says: "I have made every conceivable cross with twenty odd varieties of thoroughbreds, besides crossing them on common stock." He reports as giving the most satisfactory results Leghorn on Light Brahma.

In reply to the inquiry as to the respect in which the superiority of the cross consists, Mr. Ross says: "Brahmas are excellent moth

ers and good egg producers. Leghorns surpass all other varieties as layers, but are non-sitters. The cross possesses both qualities to perfection—loses the clumsiness of the Brahmas and inherits the activity of the Leghorn."

There is no better authority on chickens in Georgia than Mr. Ross. He lets the small breeds roost in trees, and has had no disease since adopting this plan.



AMERICAN SEABRIGHT.

Mr. F. N. Wilder, of Monroe county, has bred the Light Brahma, Dark Brahma, Brown Leghorn and Plymouth Rocks, and prefers decidedly the Light Brahma as a combination fowl. He says the Brown Leghorns lay the largest number of eggs, but the Light Brahmas more in weight. He thinks the Light Brahma unsurpassed as a table fowl. He says the cross of the Brown Leghorn on the Light Brahma makes a superior egg producer and table fowl, but not reliable as sitters. His opinion in regard to the comparative weight of eggs produced by the Brown Leghorns and Light Brah-

mas does not correspond with the experience of others. The half-bred Leghorns have generally in other hands proved reliable sitters and good mothers.

Mr. Wilder says: "The Light Brahmas with me are very hardy, good layers, sitters and mothers, and the eggs large and very rich. When well fed they mature early for the table. They are good winter layers, and often attain to a very large size." He says: "I have had no disease. I feed regularly, and always have fresh water accessible to them in *clean* earthen vessels, putting in a few drops of carbolic acid twice a week. I keep their quarters clean and free from vermin; provide them with good dust baths, into which a little sulphur is occasionally sprinkled. Haul occasionally a load of cinders from the blacksmith's shop into their yards."

Messrs. J. T. Scott & Bro., Crawfish Springs, in Walker county, North Georgia, derive satisfactory results from some breeds not approved by breeders farther south. They have bred the Dark Brahma, Light Brahma, Partridge Cochin, Buff Cochin, White Cochin, Brown Leghorn, White Leghorn, Plymouth Rocks, Black Hamburgs, Golden-spangled Hamburgs, Houdans, etc.

The American Seabright is a new breed which promises well, but has not been sufficiently tested to justify more than a passing notice here.

GENERAL MANAGEMENT OF THE FLOCK.

The variety to be grown having been decided upon, the breeder should fully determine upon a definite system of management, and provide for housing, feeding and otherwise caring for the birds in such manner as will insure success and profit.

The variety to be grown should depend upon the surroundings of the breeder as regards the extent of the range available. As a general rule, all of the smaller birds require a liberal range for maximum production. The larger breeds, such as Cochins, Brahmas, etc., thrive better with reasonable liberty, but suffer less from close confinement than the smaller varieties, such as the Leghorns, Games, etc. If it is necessary to confine the fowls to a contracted area, the breeder must, as far as practicable, supply by artificial means the conditions of this natural range.

Birds that have the liberty of a farm supply themselves with three classes of food and gravel, by means of which their food is prepared for digestion. They find on the natural range seeds of various kinds, a variety of green vegetable matter and insects, the three together supplying for them bread, vegetables and meat. If the birds are deprived of making their own selection of these classes of food in a natural manner, by reason of confinement within limited inclosures, they must be supplied by artificial means or the fowls will suffer from the privation and be unprofitable to their owners. Generally there will be no practical limit to the range available for fowls on the farm, and hence it will be assumed that poultry have free access to grass or small grain throughout the year, and that, except during the winter, they will be able to secure a reasonable supply of meat in the form of insects. During the winter, scraps of meat from the table will supplement the short supply of insects.

If there is not an abundant supply of perennial grass to which the fowls have daily access, small grain of some kind should be sown to supply pasturage for them during the fall, winter and early spring.

HOUSES AND SHEDS.

Breeders of poultry in Georgia should not be induced to follow the practice of those in more northern climates in constructing houses for the accommodation of their flocks. Here, where the mercury never reaches zero and seldom falls below twenty degrees, very close houses are neither necessary nor desirable. On the contrary, close houses, in our warm climate, are often fruitful causes of disease and death among poultry that are required to occupy them. Let any one who is skeptical on this subject enter a close house in which a large number of poultry are roosting on a warm night and observe the foul air which the poor birds are compelled to breathe, and the correctness of the above statement will at once be recognized. Close barns, built after the pattern of those of the Northern States, have been repeatedly tried in Georgia, and as often abandoned as unsuited to our climate. Close houses are no better suited to poultry than to cattle in warm climates. They may be used during the winter months to advantage if well ventilated, but the fowls should be excluded from them from May 1st to October 1st, and required to roost either in trees or open sheds. Thorough ventilation is absolutely necessary, even in winter, to prevent disease. This should be provided for by a "lantern," rising above the center of the roost and provided on the sides with slats arranged after the manner of Venetian blinds, or by having the south side of the house, from within three or four feet of the floor to the top, closed in with one by three slats, leaving a space of one inch between them. The roof should be sufficiently tight to perfectly protect the interior of the house from rain, and the north, west and east sides so close as to exclude cold winds. Fowls will suffer more during cold spells, if confined in a house in which they are exposed to draughts of cold air, than if roosting on trees where the whole body is exposed alike to the cold. This is illustrated by the injurious effects of a draught of cold air upon the person of a human being while sleeping. The roosts need not be more than thirty inches from the floor of the house, and eighteen inches from the wall, especially if the large breeds are kept. At eighteen inches from the floor place a shelf two feet wide, extending immediately under the roost. Dry earth, coal ashes or cotton seed should be sprinkled

over this shelf to catch the droppings, and to facilitate their collection, at intervals of two or three days.

The nests may be placed against the wall of the house, under this shelf, and thus be entirely protected from the droppings and sufficiently secluded to suit the hens. The droppings can be very easily swept from this shelf, into a vessel placed under it, without defiling the floor. The droppings should be removed two or three times a week and stored under shelter away from the fowl house. The floor of the house, if of dirt, should be filled two or three inches deep with dry sand, or clay, which should be dug up and removed once a year and replaced with fresh soil. Whether of dirt, cement or plank, it should be occasionally sprinkled with diluted sulphuric acid to destroy all germs of disease which may have found a lodgment there. The sulphuric acid should be carefully handled to prevent injury to the clothing or persons of those applying it. The house should be thoroughly whitewashed twice a year to purify it and to destroy insects injurious to the poultry. Crude petroleum, or, if this cannot be had, kerosene oil, sprinkled over the roosts and sides of the house, will be found beneficial in destroying the insects.

Thorough fumigation with tobacco smoke while the fowls are confined in the house will prove efficacious. In order to secure the full benefit of this, however, the house must be made close enough to retain the smoke.

Fowls are, however, far more healthy in our climate if required to roost in trees during the summer. Indeed, they will be more healthy if required to roost on trees throughout the year; but will not produce so many eggs in winter as they will if kept during the cold months in comfortable houses.

Nests, on which hens are expected to sit, should be made upon the ground rather than upon plank. If made upon the latter it will be well to place upon the bottom of the nests a fresh sod before sitting the hens. Hollow out the sod in the form in which the hen prepares it when left to her own instincts, and make a nest of green cotton seed, preserving the same form. The green cotton seed are in some way offensive to mites and other insects injurious to fowls. Some years since an experiment was made with green cotton seed in nests by the side of others in which grass was used. While eggs

in the latter were infested with mites daily for many days in succession, those in the former were entirely exempt from them.

After nests have once been used by sitting hens they should be thoroughly renovated. The material of which the nests are made should be entirely removed, and either burned or thrown into the manure pile.

In addition to the house, there should be a shed with southern exposure, under which the fowls may shelter themselves from cold wind and rain. This shed should be provided with dust-baths of dry earth mixed with ashes into which flower of sulphur is occasionally sprinkled.

The droppings of both animals and birds furnish a fruitful source of disease; hence the importance of extreme caution in removing promptly all droppings from the house and frequently using disinfectants about the houses.

This subject will be further treated under its appropriate head, and extracts from recent scientific investigations given.

INCUBATION AND MANAGEMENT OF CHICKS.

If practicable, sitting hens should have a separate apartment where they will not be disturbed by others seeking nests; but this can seldom be arranged on the farm. The next best arrangement is to provide woven wire gates, or doors, for the nests occupied by sitting hens, to prevent intrusion from others, and at the same time afford ample ventilation. With this arrangement it will be necessary to remove the hen once a day to take food. No inconvenience will arise from this if the hens are as gentle as they should be. It will not be necessary to keep the door of the nest closed regularly unless there are other hens disposed to intrude upon the sitters. It is well, however, to have ready a means of protecting them when necessary.

Eggs should be marked when placed under the hens in order that those laid after she commences to sit may be readily distinguished and promptly removed. The number of eggs to be put under a hen will depend upon the season of the year and the size of the hen. In winter, when the temperature is so low that the par-

tial exposure of an egg would prove destructive of the chick, fifteen eggs are enough for a large hen and thirteen for a small one.

Later in the season, when the thermometer ranges from 70° at night to 80° or 90° at noon, nineteen or twenty-one may be set under the hens of the larger breeds and fifteen under those of the smaller breeds.

The eggs should be frequently examined, and if any have been broken those remaining should be carefully washed in milk-warm water, and, as promptly as possible, gently wiped and returned to the hen. If this is not done, the chicks will die in all of the eggs to which any considerable quantity of the contents of the broken ones has adhered. Whether this results from the stifling odor of the decaying eggs, or from suffocation by closing the pores of the shells, is not known, but the fact is known to every experienced poultry raiser, though the remedy is seldom applied.

If hens are set upon nests with plank bottoms it will be found advantageous to sprinkle the eggs with tepid water daily during the last week of the incubation. During very dry spells this will be found to be beneficial even when the nests have dirt bottoms, unless the hen seeks her food, while off, in grass wet with dew.

If nothing goes apparently wrong with the hen, it is best to disturb her as little as possible during her incubation. When hatching commences all that is necessary is to remove the shells that have hatched to prevent them from covering the pipped eggs and stifling the chicks. It will sometimes be necessary, if the hatching is continued longer than twenty-four hours, to feed the hen to prevent her from leaving her nest before the hatching is completed.

The best food for the young chicks, for the first few days, is hard boiled eggs, but very few will be willing to use eggs in this way. An excellent food for them is curds, or plain corn bread crumbled in buttermilk or clabber. Soft, sticky, raw dough should never be fed to young fowls, and is not proper food for adults. Wheat bran, or shorts, mixed with corn meal and not made too wet, or baked into bread, will be found suitable food for growing chicks and adults as a morning feed. If they have a liberal range, two meals a day will be sufficient, giving dry dough, or bread, in the morning and grain of some kind just before they go to roost. If fed on meal at night it is so rapidly digested that the crop becomes empty before morning, and the birds consequently suffer.

The food should be varied during each week by using different combinations of meal, shorts, bran, etc., for the morning meal, and the different grains for evening.

It is a good plan to sow plats of Egyptian wheat, Dourra corn, German millet, rural branching sorghum, or millo maize, sorghum cane, field peas and chufas, for pasturage. With such plats accessible to the poultry no more feeding will be necessary than just enough to keep them gentle, and to collect them daily to be counted and examined. These crops will come into use in succession from July until mid-winter. The chufas will not be noticed by the poultry until all of the seed of the other plants have been consumed. After the tops of the chufas die down, a few bunches should be upturned to attract the attention of the chickens. When they once learn where to find them they will continue to scratch for them as long as a nut can be found.

With these crops and small grain accessible to the fowls, very little feeding will be necessary, and the poultry will be more healthy than when they are abundantly fed at regular intervals without such range.

Pure fresh water should be always accessible to the poultry in either iron, stone or earthenware vessels.

If disinfectants or tonics are necessary they can be very easily and conveniently administered through the water.

FOOD VALUES OF DIFFERENT MATERIALS.

The following table is copied from "Wright's Practical Poultry Keeper."

THERE IS IN EVERY 100 POUNDS OF	FLESH-FORMING FOOD.	WARMTH-GIVING FOOD.		BONE MAKING FOOD.	HUSK OR FIBRE	WATER
	Gluten, etc.	Fat or Oil.	Starch, etc.	Mineral substances.		
Oats	15	6	47	2	20	10
Oatmeal	18	6	63	2	2	9
Middlings	18	6	53	5	4	14
Wheat	12	3	70	2	1	12
Barley	11	2	60	2	14	11
Corn	11	8	65	1	5	10
Rice	7	a trace	80	a trace	—	13
Beans and Peas	25	2	48	2	8	15
Milk	4½	3	5	¾	—	86¾

Commenting on this table Mr. Wright says: "To show the practical use of this table, it may be observed that whilst 'middlings,' from its flesh-forming material, is one of the best summer ingredients, in winter it may be advantageous to change it for a portion of Indian meal. It is, however, necessary to avoid giving too great a proportion of maize, either as meal or corn, as the effect will be a useless and prejudicial fattening from the large quantity of oil it contains; it is best mixed with barley or bean-meal, and is then a most economical and useful food. Potatoes, also, from the large proportion of starch contained in them, are not good unmixed as a regular diet for poultry, but mixed with bran or meal will be found most conducive to condition and laying.

"In mixing soft food, there is one general rule always to be observed, it must be mixed rather dry, so that it will break if thrown upon the ground. There should never be enough water to cause the food to glisten in the light, or to make a sticky, porridgy mass, which clings around the beaks of the fowls and gives them infinite annoyance, besides often causing diarrhœa. If the weather be

dry, and the birds are fed in a hard, gravelly yard, the food is just as well, or better, thrown on the ground."

If, however, such ground is not accessible, or if fed in a shed, a vessel protected by wire or slats driven around it to prevent them from walking over the food or scratching it out will be better.

As before remarked, pure water is as important as good food. The water vessel should be so constructed that the fowls cannot scratch dirt into it. There are several forms of poultry fountains which answer well for this purpose.

Tonics and disinfectants can be administered in the drinking water. On this subject Wr. Wright says: "It is well in winter to add to the water a few drops of a solution of sulphate of iron (green vitriol), just enough to give a slight mineral taste. This will in a great measure guard against roup, and act as a bracing tonic generally. The rusty appearance the water will assume is quite immaterial. The best plan, perhaps, is to keep a large bottle of the celebrated 'Douglas Mixture,' respecting which we can speak with unqualified approval, as a most valuable addition to the drink in cold weather of both fowl and chickens. It conists of half a pound of sulphate of iron and one ounce of sulphuric acid dissolved in two gallons of water, and is to be added in the proportion of a teaspoonful to each pint of water in the fountain. Whilst the fowls are moulting, the above mixture, or a little sulphate of iron, should always be used; it will assist them greatly through this, the most critical period of the whole year.

"A little hemp-seed should also be given every day at this season, at least to all fowls of value, and with these aids, and a little pepper on their food, with perhaps a little extra meat, or even a little *ale* during the few weeks the process lasts, there will rarely be any lost. With hardy kinds and good shelter such precautions are scarcely necessary, but they cost little, and have their effect also on the early recommencement of laying.

"In addition to their regular food it will be needful that the fowls have a supply of *lime*, in some shape or other, to form the shells of their eggs. Old mortar pounded is excellent; so are oyster-shells well burned in the fire and pulverized; of the latter they are very fond, and it is an excellent plan to keep a saucer full of it in their yard. If this matter has been neglected, and soft shell-less eggs

have resulted, the quickest way of getting matters right again is to add a little lime to the drinking water."

Whether the fowls occupy houses or trees as roosting places, the droppings should be regularly collected at short intervals and kept under shelter until needed. Since the solid and liquid parts of the manure from fowls are united, it is highly ammoniated, and while it furnishes an admirable application to the class of plants requiring a liberal supply of nitrogen, it contains an excess of nitrogen for most of our cultivated plants if used alone. It is therefore well to mix it with an equal weight of superphosphate and a small quantity of kainit, thus producing a complete manure of superior merit. If cotton seed are used for nests they form a valuable addition to the manure heap when discarded from the nests to make room for a fresh supply.

DISEASES.

There are only a few diseases of fowls which need notice here.

Prevention is the best policy, and this may easily be accomplished by using the necessary precautions as regards the use of disinfectants and insecticides, with proper attention to cleanliness and judicious feeding.

If contagious diseases appear in the flock, the best policy is to kill the diseased birds as soon as the character of the disease is ascertained.

The dead birds should be either burned or deeply buried at a distance from the run of the balance of the flock, and vigorous measures at once adopted to perfectly disinfect the premises, removing, if practicable, the well birds from the yard which the diseased birds have used, until thoroughly disinfected by the use of sulphuric acid.

No one who values his poultry should allow disease to appear among them. Its appearance is generally the result of criminal neglect in the management of the flock. It often results from the weakening effects of insect vermin where fowls are required to roost, lay and sit in neglected houses.

It not unfrequently arises from the foul air produced by accumulations of their droppings upon a damp floor, intensified by confinement in too close and contracted quarters.

Another fruitful source of disease is found in stagnant or polluted water with which the poor birds are compelled to slake their thirst.

As usually watered in flat, open troughs, the fowls are frequently required to drink a solution of their own droppings. With such treatment health cannot be expected.

Irregularity in feeding is another fruitful source of disease. During the winter months when insects are scarce and the birds consequently find but little meat on their run, they are freely fed with bred or grain. When spring arrives and insects become abundant they get little except meat, and the feeding is too often discontinued under the impression that they procure abundant supplies on the run and do not need feeding.

They thus have a bred diet in winter and one principally of meat (insects) in summer, and the natural result of such management is indigestion, disease and death. Fowls, no matter how good their range, should be fed twice a day—morning and evening—the quantity of food given depending upon the character of that accessible to them during the day.

In winter meat of some kind should be mingled with their bread, and in summer they should have bread to mix with their daily catch of meat (insects).

A free use of flour of sulphur in their nests, and dust baths, and an occasional dose in the food of small chicks and stock birds will prove beneficial. The houses should be whitewashed inside and out with a mixture of lime, salt and carbolic acid, and the floor occasionally sprinkled with sulphuric acid, to destroy all germs of disease that may have found a lodgment there.

DISTEMPER.

Mr. I. K. Felch, in his "Breeding and Management of Poultry," says: "This disease all chickens are heir to, and generally is taken about the time they are twenty-two to twenty-six weeks old, and at the time they are shedding their second chicken feathers. * * *

"If carefully watched, little or no medicine is needed, and so light is the disease that it hardly deserves a place in this catalogue. Yet if not jealously watched it becomes the most frightful in the introduction of roup and consumption.

"*Symptoms.*—A listless, quiet mien; a disposition to remain on the roost in the day-time; face and comb quite red, and a puff or fullness of the face under the eye. The second day a white froth is discerned in the corner of the eye. A decided loss of appetite is also noticeable.

"*Treatment.*—If noticed, and the disease taken in hand before the appearance of the froth in the eye, it will usually only be necessary to wash the head and beak clean, and blow down through the nose into the throat either with the mouth, or by means of a rubber nipple, thus clearing the tear tube, and bathe the head and wash the throat with a solution of carbolic acid—one part acid to ten parts water. The birds should be kept in a quiet place and allowed nothing but water.

"The third day they will regain their appetites and all is over. Many of them have this distemper so lightly as not to be noticed. In aggravated cases, when the eyes and face are much swollen, the head and throat should be thoroughly steamed by the use of a large sponge and hot water. The tear tube should be cleared (as before explained), a dessert spoonful of castor oil given, and the bathing of the face and throat with the solution of carbolic acid continued at short intervals. This distemper may be called a cold, or the incipient stages of the roup. We will not quarrel about names, but simply say that in our opinion it is no more roup than a cold is measles. There is no offensive smell to the breath as in roup, but, if neglected, it will excite roup. We have not the slightest doubt of this; in fact know it to be the case, and the breeder has the choice of adopting the adage, 'a stitch in time saves nine,' and attending to this mild, easily managed distemper, or to neglect it and have that scourge of a poultry house, 'the roup,' to contend with." In regard to

ROUP

The same author says: "When roup appears, our advice is to kill the affected one and turn our attention at once to the flock, giving sulphur in the ratio of a tablespoonful to fifteen fowls every other day for a week, feeding tincture of iron, eight drops to a hen every day in their soft food, which will pay to be boiled rice, until treatment is over. With this be sure that the ventilation is complete and free from direct draughts upon the fowls. For the benefit of those who wish to cure the disease, we give the following symptoms and our method of treatment:

"*Symptoms.*—Swelling of the head, watery discharge from the eyes and nostrils, which are very fœtid and offensive to the smell, following which, these discharges become acrid and result in a congealed yellow coating to the mouth and tongue, called canker, which we term a poisonous fungus growth in the blood.

"*Treatment.*—Wash and steam the head and throat with hot water in which a dash of carbolic acid is added. Clear the nasal passage to the throat by an injection of carbolic water, one part of carbolic acid to ten parts of water. Gargle the throat and tongue with a solution of potash, but do not peel the canker off, if to do so causes any bleeding, for that would only aggravate the disease. Give a dessert-spoonful of castor oil, and each morning give nearly a gill of milk in which three or four grains of hyposulphite of soda have been dissolved. At evening, after the washing and steaming, the cleansing of the nasal passage and the gargling give a gill of milk with eight drops of tincture of iron.

"The milk can be easily administered by taking the bird by the under beak and drawing the neck upward till straight, when the milk poured from a tea-pot will run into the crop without the effort of swallowing.

"At the end of about four or five days the effect of the hyposulphite of soda in the blood, and the solution of carbolic acid as a wash, may be seen in the sloughing off of the cankerous substance from the tongue and mouth, when the fowl will commence to mend. The treatment at this stage should be nourishing food, with occasional doses of sulphur, and the fowls will regain their health and sprightliness. Six-sevenths of the cases of roup are curable, but its extreme contagion makes the cure a questionable policy, and it should never be undertaken unless the affected fowl be at once removed from the flock and fowl-house."

Gapes is common among chicks from four to six weeks old when supplied with foul water, especially if poorly fed during wet spells. Mr. Wright says: "The disease consists—at least so far as actual symptoms extend—in a number of small worms which infest the windpipe, and cause the poor chicken to gasp for breath. If taken early, it will be sufficient to give every day a morsel of camphor the size of a grain of wheat, and to put camphor in the drinking water, or a little turpentine may be given daily in meal, taking care, of course, that the deficiencies in diet and shelter be amended. In fully

developed cases the worms must be removed by introducing a loop of horsehair into the trachea, or windpipe, and turning it round during withdrawal, the operation to be repeated several times till all the worms appear to be extracted. A feather, stripped almost up to the top, may be used instead of the horsehair."

CHOLERA

has been the especial scourge of the poultry yards of the South, and until recently has baffled the skill of all investigators. Dr. D. E. Salmon, of the Veterinary Division of the United States Department of Agriculture, has for several years been pursuing a systematic, scientific investigation of this disease with very instructive results. He has succeeded in cultivating the virus containing the gesms of the bacteria, which cause the disease, and by diluting it in different degrees has been able by inoculation to produce the disease at will in virulent or mild form, according to the strength of the virus used.

The theory on which he proceeds is, that by successive cultivations he will so far weaken the virus as to be able to produce by inoculation effects similar to those resulting from vaccination of human beings.

All medical treatment failed even in his skillful hands. He found that the germs of the bacteria, voided in the increment of diseased fowls, retained vitality and was capable of producing the disease in fowls fed upon the flesh of dead birds that had been frozen. He found also that the virus, after six successive cultivations in a flask prepared for the purpose, had lost but little, if any, of its virulence.

His experiments showed that burial of the fowls, that had died with cholera, for six months, destroyed the germs of the bacteria. He expresses the opinion that putrefaction destroys the germs, but when protected from this, as in the case of frozen flesh, vitality is retained. Under the head of

THE EFFICIENCY OF DILUTED SULPHURIC ACID AS A DISINFECTANT,

Dr. Salmon says:

"The solution of commercial sulphuric acid of the strength of one part to two hundred of water, which I have heretofore recommended as a cheap and most efficient disinfectant in this disease, has been in continual use during these experiments. I have shown in

my former report how dangerous it is to place susceptible fowls in coops that have been occupied with those sick with cholera when no disinfection is practiced. During these experiments it has been necessary to use the same coop over and over again, and frequently it was impossible to place them upon fresh ground, and in some cases even the accumulations of excrement were not removed; at all times reliance was placed upon this disinfectant, and the watering troughs, coops and grounds thoroughly saturated with it. In no single instance out of more than a hundred have the most susceptible fowls contracted the disease from such disinfected grounds or coops. The value of this agent is, then, fully confirmed by a large number of cases. It deserves even more credit for efficiency than I have before given it, since considerable accumulations of virulent manure have been rendered perfectly harmless after a thorough saturation with it. As a disinfectant, therefore, it cannot be too highly recommended, and it should be largely used by all who suffer from the ravages of this plague."

In order, therefore, to *prevent* this so-far incurable disease, all breeders of poultry should use this simple, cheap and efficient disinfectant at intervals of not more than a month.

BUMBLE FOOT OR CLUB FOOT.

This is generally caused by heavy fowls flying down from too high roosts. It resembles what is known as "stone bruise" in the human foot. On this subject Mr. Felch remarks: "The flesh of the foot being so tough, the pus cannot escape; therefore, if not attended to, it must congeal and an ungainly, troublesome foot be the result. "When discovered before the pus congeals, lance the swelling at the rear of the foot, and the pressure upon it in walking will press the pus out and there will be a much smaller callous than if allowed to settle down of its own accord. We have treated cases by making an incision in front and rear of the foot, and those on the shank by opening at top and bottom, and by the use of a syringe and a solution of carbolic acid, of one part of acid to ten parts of water, cleanse them thoroughly when they all heal up." This is seldom attended to in time to prevent evil consequences.

THE RED SPIDER LOUSE—MITE.

Mr. Felch says:

"This pest is the scourge of the poultry-house, and the source of

more trouble and annoyance than any other hindrance to poultry keeping. The quarters often become literally alive with them before the breeder is aware of their presence. They sap the life-blood from the fowls and reduce to skeletons and debilitate a flock to such an extent as to make the season unprofitable. Working only in the night, they escape notice and have things their own way.

"Fowls that are sitting upon eggs are generally the greatest sufferers, for these lice instinctively seek out such hens as are about to hatch their brood, and many a hen sacrifices her life to her motherhood.

"In this case the hen becomes sallow in the face, and comb actually bloodless, the lice having consumed the blood to such an extent as to cause death, and many fowls, whose death has been attributed to disease, have been murdered by these pests.

"The quarters should be constantly watched, and all the cracks and knots on or about the roost saturated with coal tar and kerosene oil or carbolic acid. The houses must be kept free from them, for the exhaustive influence of these marauders not only entails the loss of blood to the fowls, but by reducing their strength renders the flock more liable to the diseases we have described.

"It is therefore the best and surest step, toward warding off disease, to have an absolutely clean poultry house. If from one to three pounds of sulphur be mixed with the loamy sand and gravel covering the floor, in which the fowls may dust themselves, and kerosene oil used as described, the fowls occasionally dusted while on their roosts with a dredging box filled with sulphur and Persian insect powder, or carbolic powder, their quarters will soon be cleansed. Cleanliness, coupled with judicious feeding, is what makes fowls profitable. So great a nervous irritant are these species of vermin, that in two flocks, equally well feed, the flock which occupies quarters infected with lice will not lay at all, while those free from this annoyance will lay nearly every day. This fact proves them to be an expensive enemy to the breeder. We do not go so far as some writers, and say that all disease is caused by lice, but will say that many a fowl would not have suffered disease were it not for this barn or spide louse. Breeders, look for them at all times. Do not wait for them to make themselves known and force their acquaintance upon you."

THE PIP.

Writers generally ridicule the idea of classing pip as a disease.

Mr. Wright says: "Pip is no disease and demands not reatment, being only analogous to a 'foul tongue' in human beings. Cure the roup, or bad digestion, or whatever else may be the real evil, and the thickening of the tongue will disappear too."

Whether it be classed as a disease or not, it has its well-defined symptoms, and whatever be the cause the remedy is simple and effectual.

The tongue becomes coated over with a horny substance which so stiffens that organ as to prevent its use in taking food. If not attended to promptly the fowl gradually declines until starvation terminates its existence.

Remove the coating from the tongue and the bird at once returns to its food and recovery is rapid. Few practical poultry raisers have not had experience with the removal of this horny substance from the tongues with perfectly satisfactory results, the bird returning promptly to its food and rapidly regaining health and strength after the removal of the "pip."

Those who wish to follow Dr. Salmon through the details of his investigation of fowl cholera will find his reports in the United States Department of Agriculture, reports for 1880 and 1881–2.

As before remarked, the safest policy in nearly every instance is to kill the diseased birds rather than attempt treating them, devoting at the same time the utmost energy to the protection of the remainder of the flock by the use of disinfectants and by a thorough renovation of their quarters.

If proper attention is given to cleanliness, feeding and the use of disinfectants, there need be no disease among fowls, and there *should be none.*

OTHER POULTRY.

TURKEYS.

It is agreed on all sides that the turkey is a native of the Western Continent, some maintaining that the wild and domesticated birds have a common origin from the wild variety now in our forests, the variations having been caused by the influences of domestication, while others contend that there were three original types of the wild turkeys, viz: the Mexican, Honduras and the Bronze turkey still found in the United States.

Be this as it may, it is of little importance to the practical breeder. Naturalists have given to the three varieties the following names, viz: Meleagris Ocellata, to those from Central America; M. Americana, to the wild American species such as are found in our forests, and M. Mexicana, to the Mexican species.

If it is true that all of the varieties of chickens have been produced from a single original, the Gallus Bankiva, as claimed by Mr. Darwin, it is not difficult to believe that all of our domestic breeds of turkeys have a common origin.

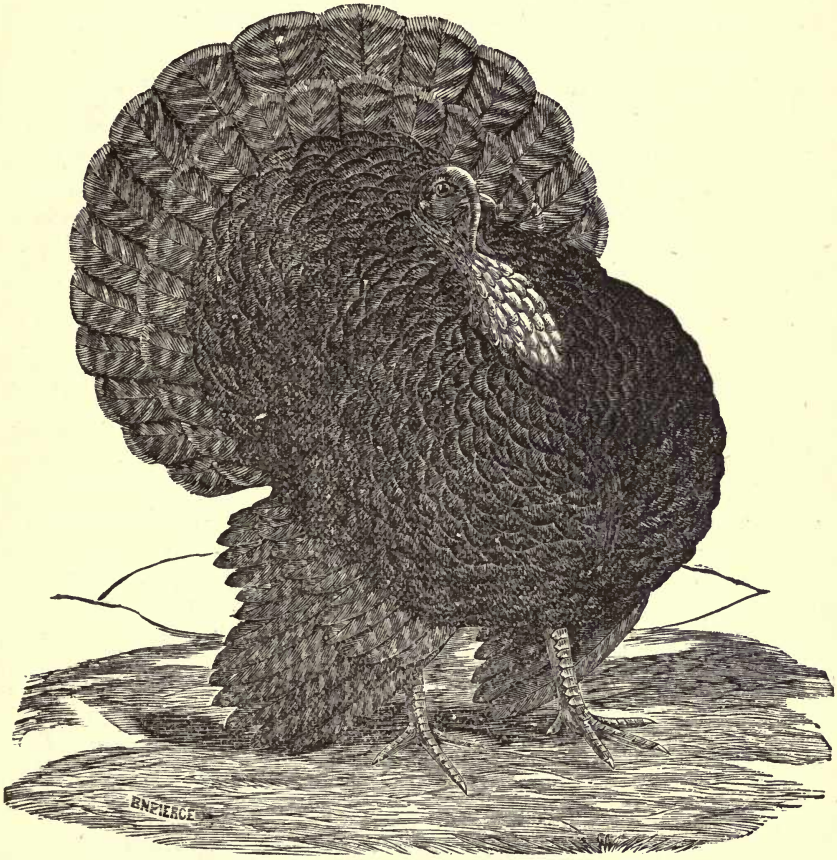
The principal varieties which claim distinctive characteristics are the Bronze, the Cambridge, the White Holland and the Norfolk.

The Bronze resembles very closely in plumage the M. Americana, or common wild turkey of our forests, and seems to have been the result of a cross of the wild gobbler upon the domestic hen. They are very handsome and hardy and attain to a greater size than the other varieties, the gobblers weighing as much as forty pounds.

They are more disposed to range than the other breeds, and hence cannot be kept, except where abundant range is afforded on the premises of the owner. The other breeds are more domestic, but less hardy and of smaller size. The variegated colors of many turkeys result from crosses of the different breeds.

They have not been bred with the same care that chickens have, except, perhaps, the Bronze variety, which has received much attention within the last few years.

It is rarely profitable to breed turkeys on a small scale or on



BRONZE GOBBLER.

small runs, but on farms of considerable size, where small grain is grown, and where the turkeys have the run of the stubble after the grain has been harvested, they can be reared at small cost and with but little trouble.

The hens commence to lay in early spring and lay from twelve to eighteen eggs each. If allowed their liberty they usually seek their nests in some quiet, secluded spot where they are least likely

to be disturbed by the gobbler. Some allow them to select their own nests for both laying and sitting; other smove them to houses when they show broody propensities, and confine them upon a sitting of eggs, removing them daily for the purpose of taking food, while others still confine the hens daily until they have laid, thus requiring them to lay in the house where they have to sit.

The hens are very close sitters, and, if not disturbed, usually hatch well under any of the three plans.

The chicks are apparently stupid when first hatched, and inexperienced breeders become impatient of their delay in taking food. A few hen eggs should be put under each turkey hen six or seven days after she commences to sit upon her own eggs. The chickens will soon teach the young turkeys, which are quite imitative, to eat if such teaching is necessary.

The young turkeys are very tender and delicate when first hatched, and require very careful housing and feeding for several weeks. If many hens are kept a number of them should be set at the same time, so that the young turkeys hatched by the whole number may be given to a few hens, and the remainder set at liberty to lay another sitting of eggs.

If only a few hens are kept, and it is desired to secure the maximum number of eggs from them, they need not be allowed to sit at all, but the eggs hatched under chicken hens.

A larger per cent. of the young turkeys will generally be raised in this way than by the turkeys themselves, and they will have, when grown, less propensity for rambling.

Again, under this system the turkey hens will lay twice as many eggs as when allowed to sit. Young turkeys are so senitive to cold and dampness that the hen carrying them should be inclosed for some weeks in a well sheltered pen in which there is a plank floor. The young ones may be allowed the liberty of a small run in dry, pleasant weather, but must be scrupulously protected from rain and not allowed to run in grass which is wet with dew or rain.

The floor of the pen must be kept clean, and dry, and pure, fresh water kept constantly within their reach. The vessel in which water is given them must be so shallow as to avoid all risk of drowning the young.

For some weeks after hatching the young turkeys are very subject to diarrhœa, and hence the utmost care must be exercised in

feeding them. Hard boiled eggs, or curd, pressed every day, will prove the safest food for the first two weeks, after which bread soaked in just enough milk to soften it may be used to advantage. The tender tops of onions, garden fennel, purslane or dandelion, chopped fine and mixed with the other food, will be found beneficial, contributing materially to the health of the chicks.

On pleasant, bright days the hen may be allowed to take out the brood on the run, but must be carefully watched to prevent being caught in rain.

The gobbler will sometimes maliciously destroy the young turkeys, and hence prudence demands his confinement when the hens come off with their young. He will destroy many by merely trampling upon them, but will often peck them until all of the principal bones in them are broken. If there are hens still laying, with whom he consorts, there is less risk of his injuring the young turkeys, but it will be prudent to prevent any risk of his giving vent to his malicious propensities.

The wild turkey hen instinctively conceals her nest and her young from the gobbler. When the young turkeys acquire sufficient strength and activity to keep out of the way, the gobbler may be allowed his liberty, even in company with the mother birds and their young, but even then he will be a disturbing element in the flock. The young turkeys do not become hardy until the red begins to appear upon their heads. After they reach that stage they are quite hardy, and will take care of themselves if allowed a liberal range.

Turkeys are not profitable unless they glean a large share of their food from the fields, where what they gather would otherwise be wasted. They are ravenous eaters and very destructive of some kinds of vegetation.

THE GUINEA FOWL.

The guinea fowl is noted for its great egg producing qualities. The hens commence laying in May and continue through August. Generally a number of them will lay in the same nest; indeed, so great is this tendency that it is difficult to induce enough of them to have nests to themselves to secure sitters to keep up the stock. In view of this difficulty, therefore, it is well to set the early laid eggs under chicken hens.

The guineas seldom sit until too late in the season to rear a good brood, but if they can be induced to sit they generally hatch well and are remarkably successful in rearing their brood.

Another advantage in having chicken hens raise the young guineas is that they grow up more gentle and manageable than when reared by the guinea hens. Guineas have a natural disposition to roam, and are disposed to seek their nests in secluded spots at a distance from the farm house. They will pair off if the number of males equals that of the females, but if the number of the latter is in excess of that of the former, one male will consort with more than one female. In this case, however, the tendency to use the same nest will be increased.

Guineas are very cross to other fowls, and by their nervous, sudden mode of attack so surprise less active fowls that they gain the mastery over those much larger than themselves. We have no domestic fowl equal in table qualities to half-grown guineas.

In quality and flavor of the flesh they approach those of the pheasant. No farm yard is complete without guineas. They furnish an abundant supply of eggs during the warm summer months when the chicken hens, except the Leghorns, fail.

In addition to the other good qualities of the guineas, they sound a note of alarm at any unusual occurrence during the night.

THE PEAFOWL.

This is a highly ornamental bird and is generally grown with special reference to this quality. They are, therefore, suited only to spacious grounds and lawns, in which they are peculiarly appropriate.

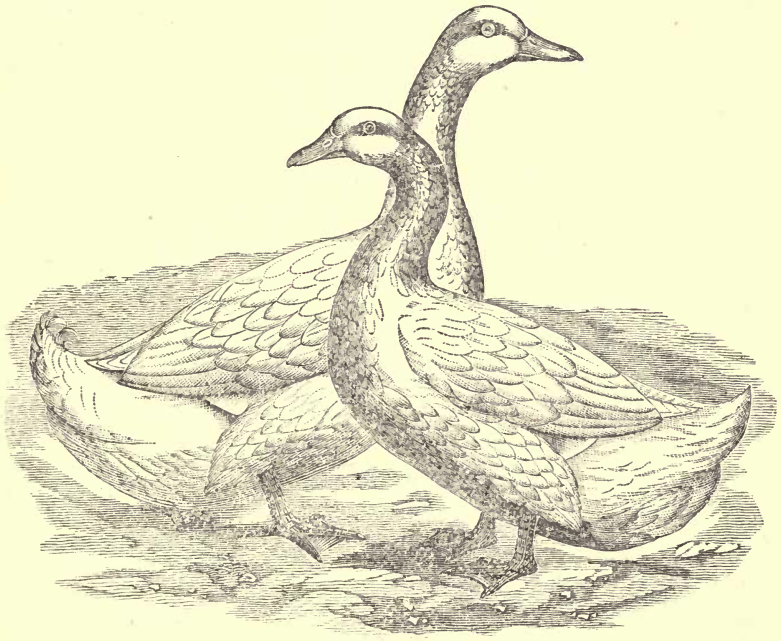
They are out of place in a general poultry yard on account of their ill nature, the mail taking special pleasure in annoying a hen with a brood and killing the chicks. One indulging, therefore, in the luxury of the peafowl as an ornamental bird must weigh well its disposition to destroy the more useful part of the flock.

It requires three years in which to reach maturity. The hen lays the second year, seeking a secluded, retired spot for her nest. She lays from five to nine eggs about the size of those of the turkey hen. The time of incubation is from twenty-eight to thirty days.

The chicks are almost as tender as young turkeys, but on account of the shyness of the old birds must be left to the care of the parent, who cares for them for six months.

WATER FOWL.

Under this head only ducks and geese will be treated as the only birds of practical utility. Swans are merely ornamental and require more water for successful culture than is at the command of most breeders.



PEKIN DUCKS.

While ducks and geese may be successfully grown under domestication, without access to more water than an ordinary drinking trough will afford, still in their natural state they live upon the water, and under domestication will seek water if in reach.

The five principal varieties of thoroughbred ducks are the Pekin, Aylesbury, Rouen, Cayuga and Muscovy, each of which has its advocates among breeders.

Of these the Pekin is the largest and most showy, is a voracious feeder, and when well fattened makes a fine table fowl.

The voraciousness of these birds is an objection to them unless they are grown on the farm where there is much waste from the grain fed to stock.

The Pekin is the largest variety of ducks; plumage pure white, beak and legs bright yellow. The profit in breeding them depends upon the cost of the food furnished them. If it must be purchased there will be little if any profit in breeding them.

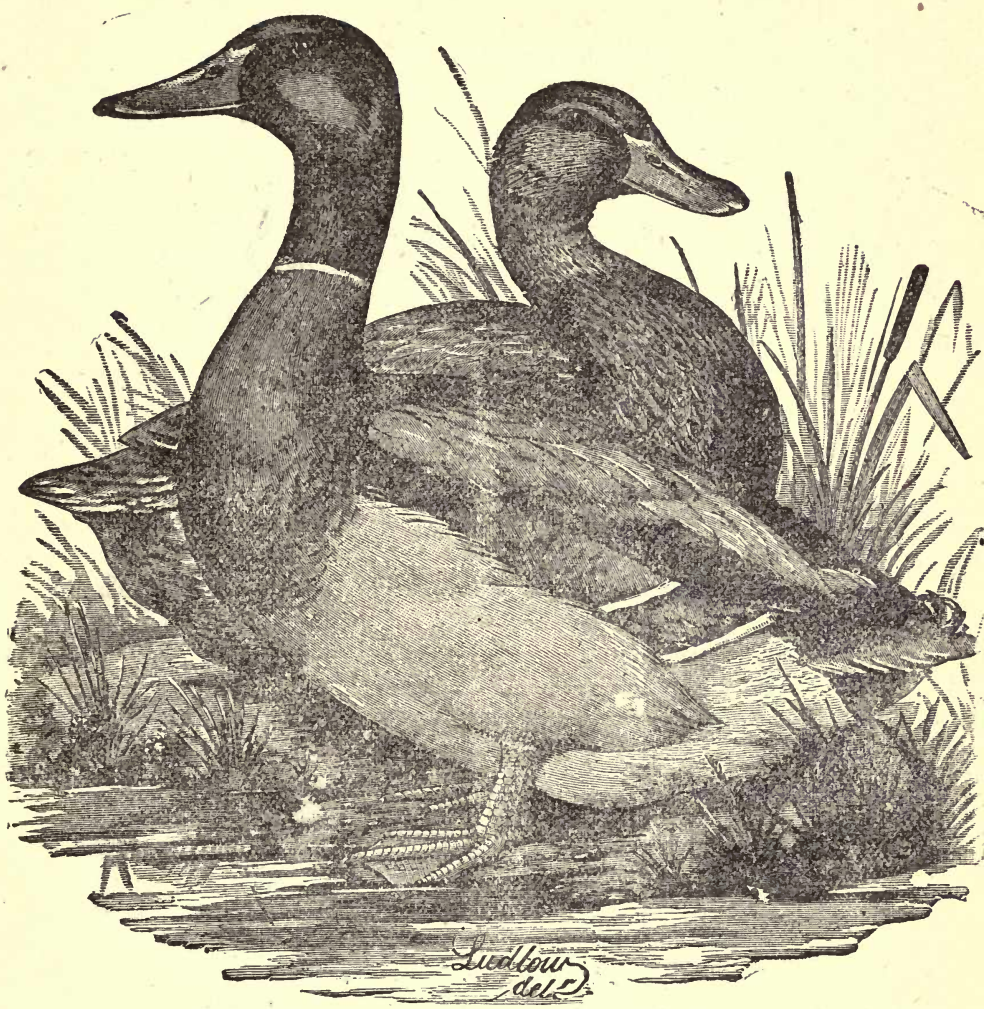
THE AYLESBURY

Is a favorite variety with many breeders and is a very valuable bird. They, too, are voracious feeders, but consume so much that chickens will not, that they can be largely supported on waste.

Mr. Fowler, good authority on such subjects, says of the Aylesbury:

"My idea of a perfect Aylesbury drake and duck is, that in plumage they should be of the finest snow white all over. The head should be full, and the bill well set on to the skull, so that the beak should seem to be almost *in a line* from the top of the head to the tip. The bill should be long, and when viewed from the front appear much like a woodcock's. It should be, in prize birds, of a delicate flesh color, without spot or blemish, and with a slight fleshy excrescence where the feathers commence. If it occasionally has a very slight creamy tint it would not disqualify, but any approach to dark buff or yellow is fatal to the pen; eye full, bright and *quite black*. The legs should be strong, with the claws well webbed, and in color of a rich dark yellow or orange. Body rather long, but broad across the shoulders, and the neck rather long and slender. The drake should have one and sometimes has two sharp curls in his tail. The weight of each bird in a show-pen ought to be about nine pounds, but this is not very often attained."

These ducks commence to lay in winter, and if not allowed to sit themselves they will lay a large number of good sized eggs during the season. A large number of the ducklings may be put with a single hen in a close warm pen where they are fed liberally upon meal mixed with boiled meat chopped fine. They will grow very rapidly under this treatment, and when two months old be ready for market. They should be kept supplied with fresh, clear water



ROUEN DUCKS.

in a shallow pan, but not allowed to go to branches or ponds until four or six weeks old, lest they be destroyed by turtles or become chilled and die from cramp.

THE ROUEN DUCKS

Are treated as the Aylesbury, but do not commence to lay so early in the season. They usually commence in February or March, and if

not allowed to sit will lay a large number of eggs. In color they should be exactly like the wild Mallard from which they seem to have originated. The Rouen is more hardy than the Aylesbury or the Pekin, but not so large as either, though equal to them in table qualities.

THE BLACK CAYUGA

Has black plumage, approaching brown, with a white collar. It is not quite so large as the Aylesbury or Rouen, but of superior flavor, and with greater aptitude to fatten than either of the above mentioned breeds. It originated on Cayuga lake, in New York. It is hardy and a good layer—weight six to eight pounds.

THE MUSCOVY,

Or Musk Duck, so called from the decided odor of musk emitted by the drake, is a very common and hardy breed, which has not been bred to any uniform color, being either white or black, or a mingling of these in every conceivable manner. There is more than the ordinary difference between the size of the drake and the duck. Their table qualities are inferior to those of the breeds already mentioned, though when well fattened they are of fair quality. The drake is exceedingly quarrelsome, and hence is a disagreeable companion in the poultry yard.

This seems to be quite a distinct breed, as its cross upon others is generally unfertile. The duck lays a large egg, but a much smaller number than either the Aylesbury, Rouen or the Black Cayuga.

THE COMMON DUCK

Seems to be a degenerate descendant of the Rouen as its plumage resembles that of the latter very closely. They are prolific and hardy but small, and are rather disagreeable additions to the poultry yard on account of the perpetual "quack," "quack" of the female. They are good layers, and when well fattened possess excellent table qualities.

All varieties of ducks are careless as to the deposit of their eggs, dropping them indiscriminately on their run or in the water, and hence it is well to keep them in the house until nine o'clock each morning during the laying season. They invariably lay early in the morning, and hence by this means all of their eggs will generally be secured.

DUCKS AND CARP PONDS.

As carp culture is now becoming so common a few suggestions on the above subject will be appropriate here. Whether the ducks seek the eggs of the carp while they remain attached to the grass on the margin of the pond is not fully determined, but there is no question of the fact that in seeking their food in the shallow water, as they are fond of doing, the ducks incidentally destroy a great many eggs. They should therefore be carefully excluded from the ponds during the spawning season of the carp, which extends from the first of April to August. After that time the ducks may frequent the ponds to the advantage of both the fish and the ducks until the return of the spawning season.

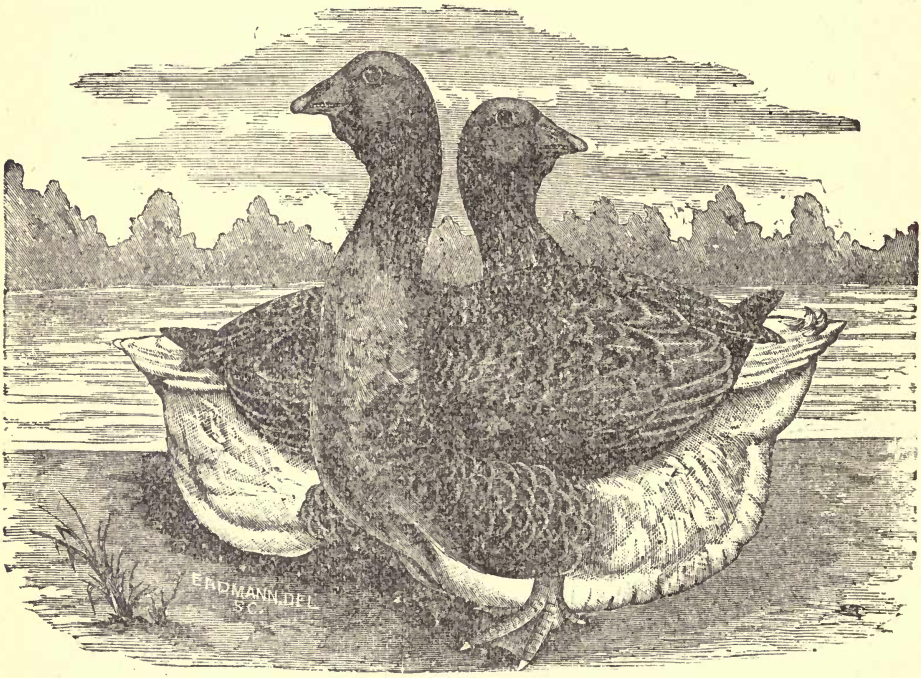
The tadpole of the bull frog is very destructive of the eggs of the carp, and as they are at their most destructive stage during the early part of the spawning season, they should if possible be destroyed. Ducks are exceedingly fond of them and are very successful in destroying them, while they do not disturb the young fish.

In order to test this, a pond which contained a large number of small carp was drawn down to a depth not exceeding two feet at the deepest part and ducks given free access to it. They were watched for two days, during which time they destroyed large numbers of the tadpoles, but were never seen to catch a fish.

Again, a large Muscovy drake was seen to swim repeatedly over a small pond eight by twenty feet in area, containing perfectly clear water not exceeding one foot in depth. In this pond were fifty six small fish. The drake observed the fish as he passed over them but made no effort to catch them. The conclusion, therefore, from observations thus far made, is that ducks may with advantage to both fish and ducks have free access to the carp ponds from August to March, inclusive.

GEESE,

While not generally prolific, can be more cheaply raised than any other kind of our domestic fowls if they are supplied with abundant green pastures. The goslings need feeding only a few weeks, when soaked bread or boiled potatoes mixed with meal may be given them



TOULOUSE GEESE.

while running on grass with the mother goose. After two weeks they may be fed on grain placed in a box containing a little water. If, however, they have access to tender grass they will thrive well without other food, provided they have dry shelter in cool nights. Their growth is very rapid even on grass without other food.

The principal breeds are the Chinese or Hong Kong, as they are sometimes called, from their supposed origin, though writers on the subject assert that there is no such domesticated breed in the vicinity of Hong Kong.

UNIV. OF CALIFORNIA

Mr. C. R. Belcher, of East Randolph, Mass., gives in Miner's Domestic Poultry, the following description of his China geese: "The bill is black, with a black or dark-colored protuberance surmounting the base of the upper mandible. A feathered wattle hangs under the throat; a dark brown stripe proceeds from the back of the head down the neck, until it reaches the upper part of the body between the wings; the fronts of the neck and the breast are yellowish gray; the abdomen is white; the back and all the upper parts of the body are of a dark, grayish color, and the legs dark, with black feet.

At two years of age, or when mature, they weigh twenty or twenty-five pounds. They are more prolific than any other variety, laying from early spring until late in the summer. It is claimed that they will hatch three broods in a year.

There is also a white variety of the Chinese geese which possess the general characteristics and qualities of the dark breed, the principal difference being found in the fact that these have pure white plumage. The other principal varieties are the Bremen, African or Guinea, Indian Mountain, Poland and Common—any of which may be made profitable under proper management and surroundings, but no one should attempt to breed geese unless provided with pasturage for them in an enclosure separate from that occupied by other domestic poultry.

ARTIFICIAL INCUBATION.

This subject has attracted a great deal of attention for the last ten years. The incubators and artificial mothers have been so far improved that both are now an assured success under intelligent manipulation. There are several patents which have given very general satisfaction.

The heat is applied by an ordinary lamp, by means of which a chamber, in which the eggs are placed on drawers, is heated to 102° or 103° F., and so constructed with valves as to regulate the temperature within a limit of two or three degrees above or below 102° F.

Some use dry air chambers, while others transmit the heat through water tanks. All of the more modern machines apply the heat from above the eggs, and supply the necessary conditions of moist-

ure by an evaporating pan placed beneath the egg tray. They have even succeeded in arranging an apparatus by means of which the eggs are turned in imitation of the practice of the hen at such intervals as experience has shown to be necessary.

Turning them four times in twenty-four hours, or every six hours, has been found to give most satisfactory results. Those who have tried them have found no difficulty in hatching a larger per cent. of the eggs than by sitting them in the natural way under hens. It is not necessary, as has been generally supposed, to place the full number of eggs in the machine at one time, but they may be added each week as the eggs are laid. No attempt will be made at a description in detail of either the incubators or the artificial mothers, the object of this notice being simply to invite attention to the means of artificial propagation and rearing of poultry in order that those who desire to experiment with them may pursue the inquiry further. Information in regard to the different styles of machines, their comparative merits, etc., can be easily obtained by correspondence with the manufacturers.

The machines hatch successfully the eggs of every species of domestic fowl.

No one should embark in artificial hatching without ample preparation for rearing the young poultry. Warm quarters must be provided for those hatched in cool weather, and provision made for supplying them regularly with meat and vegetable food. In a word, natural conditions must be imitated as nearly as possible.

The principal advantage derived from the use of the incubators and artificial mothers is in securing a better supply of early broilers than can be obtained by the natural process.

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